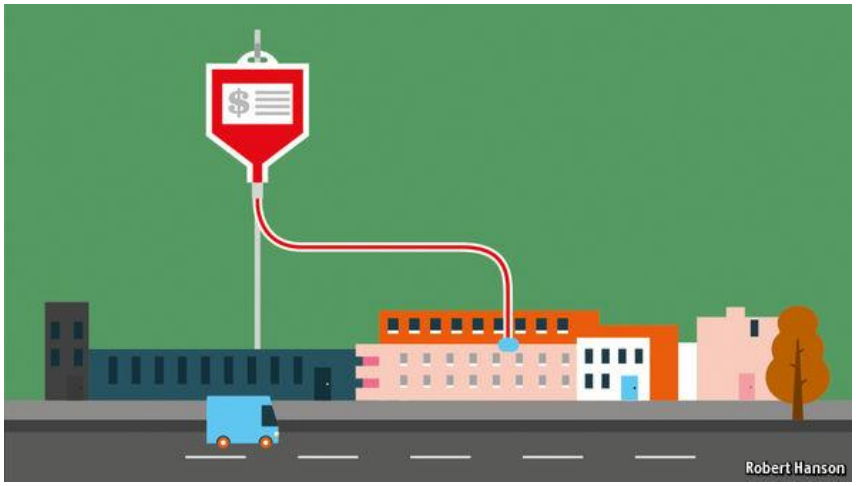
Aggregate Expenditures: The Multiplier, Net Exports, and Government



Introduction

- This chapter examines why real GDP might be unstable and subject to cyclical fluctuations.
- The revised model adds realism by including the foreign sector and government in the aggregate expenditures model.
- Applications of the new model include two U.S. historical periods and the current situation in Japan. The focus remains on real GDP.

Changes in Equilibrium GDP and the Multiplier

- Equilibrium GDP changes in response to changes in the investment schedule or to changes in the consumption schedule.Because investment spending is less stable than the consumption schedule, this chapter's focus will be on investment changes.
- Figure 10-1 shows the impact of changes in investment.Suppose investment spending rises (due to a rise in profit expectations or to a decline in interest rates).
    - Figure 10-1 shows the increase in aggregate expenditures from $(C + I_g)_0$ to $(C + I_g)_1$.In this case, the $5 billion increase in investment leads to a $20 billion increase in equilibrium GDP.
    - Conversely, a decline in investment spending of $5 billion is shown to create a decrease in equilibrium GDP of $20 billion to $450 billion.
- The multiplier effect:
    - A $5 billion change in investment led to a $20 billion change in GDP.This result is known as the multiplier effect.

    - Multiplier = change in real GDP / initial change in spending.In our example M = 4.
    - Three points to remember about the multiplier:
        - The initial change in spending is usually associated with investment because it is so volatile.
        - The initial change refers to an upshift or downshift in the aggregate expenditures schedule due to a change in one of its components, like investment.
        - The multiplier works in both directions (up or down).

- The multiplier is based on two facts.
    - The economy has continuous flows of expenditures and income-a ripple effect-in which income received by Jones comes from money spent by Smith.
    - Any change in income will cause both consumption and saving to vary in the same direction as the initial change in income, and by a fraction of that change.
        - The fraction of the change in income that is spent is called the marginal propensity to consume (MPC).
        - The fraction of the change in income that is saved is called the marginal propensity to save (MPS).
        - This is illustrated in Table 10-1 and Figure 10-2 which is derived from the Table.
    - The size of the MPC and the multiplier are directly related; the size of the MPS and the multiplier are inversely related. See Figure 10-3 for an illustration of this point. In equation form M = 1 / MPS or 1 / (1-MPC).
    - The significance of the multiplier is that a small change in investment plans or consumption-saving plans can trigger a much larger change in the equilibrium level of GDP.
    - The simple multiplier given above can be generalized to include other "leakages" from the spending flow besides savings.For example, the realistic multiplier is derived by including taxes and imports as well as savings in the equation.In other words, the denominator is the fraction of a change in income not spent on domestic output.(Key Question 2.)

International Trade and Equilibrium Output

- Net exports (exports minus imports) affect aggregate expenditures in an open economy. Exports expand and imports contract aggregate spending on domestic output.
    - Exports (X) create domestic production, income, and employment due to foreign spending on U.S. produced goods and services.
    - Imports (M) reduce the sum of consumption and investment expenditures by the amount expended on imported goods, so this figure must be subtracted so as not to overstate aggregate expenditures on U.S. produced goods and services.
- The net export schedule (Table 10-2):
    - Shows hypothetical amount of net exports (X - M) that will occur at each level of GDP given in Tables 9-1 and 9-4.

    - Assumes that net exports are autonomous or independent of the current GDP level.
    - Figure 10-4b shows Table 10-2 graphically.
        - Xn1 shows a positive $5 billion in net exports.
        - Xn2shows a negative $5 billion in net exports.

- The impact of net exports on equilibrium GDP is illustrated in Figure 10-4.
    - Positive net exports increase aggregate expenditures beyond what they would be in a closed economy and thus have an expansionary effect.The multiplier effect also is at work.In Figure 10-4a we see that positive net exports of $5 billion lead to a positive change in equilibrium GDP of $20 billion (to $490 from $470 billion).This comes from Table 9-4 and Figure 9-9.
    - Negative net exports decrease aggregate expenditures beyond what they would be in a closed economy and thus have a contractionary effect.The multiplier effect also is at work here.In Figure 10-4a we see that negative net exports of $5 billion lead to a negative change in equilibrium GDP of $20 billion (to $450 from $470 billion).
- Global Perspective 10-1 shows 1999 net exports for various nations.
- International economic linkages:
    - Prosperity abroad generally raises our exports and transfers some of their prosperity to us.(Conversely, recession abroad has the reverse effect.)
    - Tariffs on U.S. products may reduce our exports and depress our economy, causing us to retaliate and worsen the situation.Trade barriers in the 1930s contributed to the Great Depression.
    - Depreciation of the dollar (Chapter 6) lowers the cost of American goods to foreigners and encourages exports from the U.S. while discouraging the purchase of imports in the U.S. This could lead to higher real GDP or to inflation, depending on the domestic employment situation.Appreciation of the dollar could have the opposite impact.

Adding the Public Sector

- Simplifying assumptions are helpful for clarity when we include the government sector in our analysis.(Many of these simplifications are dropped in Chapter 12, where there is further analysis on the government sector.)
    - Simplified investment and net export schedules are used.We assume they are independent of the level of current GDP.
    - We assume government purchases do not impact private spending schedules.
    - We assume that net tax revenues are derived entirely from personal taxes so that GDP, NI, and PI remain equal.DI is PI minus net personal taxes.
    - We assume tax collections are independent of GDP level.
    - The price level is assumed to be constant unless otherwise indicated.
- Table 10-3 gives a tabular example of a $20 billion increase in government spending and Figure 10-5 gives the graphical illustration.
    - Increases in government spending boost aggregate expenditures.
    - Government spending is subject to the multiplier.

- Table 10-4 and Figure 10-6 show the impact of a tax increase.(Key Question 8)
    - Taxes reduce DI and, therefore, consumption and saving at each level of GDP.
    - An increase in taxes will lower the aggregate expenditures schedule relative to the 45-degree line and reduce the equilibrium GDP.
    - Table 10-4 confirms that, at equilibrium GDP, the sum of leakages equals the sum of injections.Saving + Imports + Taxes = Investment + Exports + Government Purchases.
- Balanced-budget multiplier is a curious result of this effect. (See Figure 10-7)
    - Equal increases in government spending and taxation increase the equilibrium GDP.
        - If G and T are each increased by a particular amount, the equilibrium level of real output will rise by that same amount.
        - In the text's example, an increase of $20 billion in G and an offsetting increase of $20 billion in T will increase equilibrium GDP by $20 billion (from $470 billion to $490 billion).
    - The example reveals the rationale.
        - An increase in G is direct and adds $20 billion to aggregate expenditures.
        - An increase in T has an indirect effect on aggregate expenditures because T reduces disposable incomes first, and then C falls by the amount of the tax times MPC.
        - The overall result is a rise in initial spending of $20 billion minus a fall in initial spending of $15 billion (.75 ¥ $20 billion), which is a net upward shift in aggregate expenditures of $5 billion. When this is subject to the multiplier effect, which is 4 in this example, the increase in GDP will be equal to 4 ¥ $5 billion or $20 billion, which is the size of the change in G.
        - It can be seen, therefore, that the balanced-budget multiplier is equal to 1.
        - This can be verified by using different MPCs .

Equilibrium vs. Full-Employment GDP

- A recessionary gap exists when equilibrium GDP is below full-employment GDP.(See Figure 10-8a)
    - Recessionary gap of $5 billion is the amount by which aggregate expenditures fall short of those required to achieve the full-employment level of GDP.
    - In Table 10-4, assuming the full-employment GDP is $510 billion, the corresponding level of total expenditures there is only $505 billion.The gap would be $5 billion, the amount by which the schedule would have to shift upward to realize the full-employment GDP.
    - Graphically, the recessionary gap is the vertical distance by which the aggregate expenditures schedule $(C_a + I_g + X_n + G)_1$ lies below the full-employment point on the 45-degree line.
    - Because the multiplier is 4, we observe a $20-billion differential (the recessionary gap of $5 billion times the multiplier of 4) between the equilibrium GDP and the full-employment GDP.This is the $20 billion GDP gap we encountered in Chapter 8's Figure 8-4.
- An inflationary gap exists when aggregate expenditures exceed full-employment GDP.

    - Figure 10-8b shows that a demand-pull inflationary gap of $5 billion exists when aggregate spending exceeds what is necessary to achieve full employment.
    - The inflationary gap is the amount by which the aggregate expenditures schedule must shift downward to realize the full-employment noninflationary GDP.
    - The effect of the inflationary gap is to pull up the prices of the economy's output.
    - In this model, if output can't expand, pure demand-pull inflation will occur (Key Question 10).
- Table 10-5 gives steps needed to determine the recessionary or inflationary gap.
- Try Quick Quiz 10-8.

Historical Applications

- The Great Depression of the 1930s provides a significant case study.In the U.S. a major factor was the decline in investment spending, which fell by about 90% in the 1930s.Global Perspective 10-2 shows the depression was worldwide.
    - In the U.S. overcapacity and business indebtedness had resulted from excessive expansion by businesses in the 1920s, during a period of prosperity.Expansion of the auto industry ended as the market became saturated, and this affected related industries of petroleum, rubber, steels, glass, and textiles.
    - A decline in residential construction followed the boom of the 1920s, which had resulted from population growth and a need for housing following World War I.
    - In October 1929, a dramatic crash in stock market values occurred, causing pessimism and highly unfavorable conditions for acquiring additional investment funds.
    - The nation's money supply fell as a result of Federal Reserve monetary policies and other forces.
- The Vietnam War era inflation provides an example of an inflationary gap period.
    - The policies of the Kennedy and Johnson administrations had called for fiscal incentives to increase aggregate demand.A tax credit encouraged investment spending.
    - Unemployment levels had fallen from 5.2 percent in 1964 to 4.5 percent in 1965.
    - The Vietnam War resulted in a 40 percent rise in government defense expenditures and a draft that removed young people from potential unemployment.The unemployment rate fell below 4 percent from 1966 to 1969.
    - In terms of Figure 10-8, the boom in investment and government spending boosted the aggregate expenditures schedule upward and created a sizable inflationary gap.
- The End of the Japanese Growth "Miracle."
    - Japanese economic growth was high, 9.7% annual average from 1966-1974 and 3.9% annually from 1974-1990.Unemployment was very low.
    - In 1990s its economy slowed to a halt.
    - Why did growth stop?Japan has a high saving rate, and when planned investment fell below saving, aggregate expenditures were below output.An unplanned inventory rise led firms to cut back production and a recessionary gap results.
    - It is difficult to reverse this cycle.

Limitations of the Model

- The aggregate expenditures model has four limitations.
    - The model can account for demand-pull inflation, but it does not indicate the extent of inflation when there is an inflationary gap.It doesn't measure inflation.
    - It doesn't explain how inflation can occur before the economy reaches full employment.
    - It doesn't indicate how the economy could produce beyond full-employment output for a time.
    - The model does not address the possibility of cost-push type of inflation.
- In Chapter 11, these deficiencies are remedied with a related aggregate demand-aggregate supply model.

LAST WORD: Squaring the Economic Circle

- Humorist Art Buchwald illustrates the concept of the multiplier with this funny essay.
- Hofberger, a Chevy salesman in Tomcat, Va., called up Littleton of Littleton Menswear & Haberdashery, and told him that a new Nova had been set aside for Littleton and his wife.
- Littleton said he was sorry, but he couldn't buy a car because he and Mrs. Littleton were getting a divorce.
- Soon afterward, Bedcheck the painter called Hofberger to ask when to begin painting the Hofbergers' home.Hofberger said he couldn't, because Littleton was getting a divorce, not buying a new car, and, therefore, Hofberger could not afford to paint his house.
- When Bedcheck went home that evening, he told his wife to return their new television set to Gladstone's TV store.When she returned it the next day, Gladstone immediately called his travel agent and canceled his trip.He said he couldn't go because Bedcheck returned the TV set because Hofberger didn't sell a car to Littleton because Littletons are divorcing.
- Sandstorm, the travel agent, tore up Gladstone's plane tickets, and immediately called his banker, Gripsholm, to tell him that he couldn't pay back his loan that month.
- When Rudemaker came to the bank to borrow money for a new kitchen for his restaurant, the banker told him that he had no money to lend because Sandstorm had not repaid his loan yet.
- Rudemaker called his contractor, Eagleton, who had to lay off eight men.
- Meanwhile, General Motors announced it would give a rebate on its new models.Hofberger called Littleton to tell him that he could probably afford a car even with the divorce.Littleton said that he and his wife had made up and were not divorcing.However, his business was so lousy that he couldn't afford a car now.His regular customers, Bedcheck, Gladstone, Sandstorm, Gripsholm, Rudemaker, and Eagleton had not been in for over a month!